This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) Device for mixing and distributing a dense, generally liquid, fluid and a light, generally gaseous, fluid, placed in a reaction chamber upstream from a granular bed or between two successive granular beds, the said device comprising:

- a more or less horizontal plate (62) in the reaction chamber, covering all of the cross-section of the reaction chamber and supporting,
- a multiplicity of substantially vertical pipes (60) ~~including~~ which pipes include an upper end communicating with the part of the ~~reactor~~ reaction chamber situated above the plate (62), a lower end communicating with the part of the ~~reactor~~ reaction chamber situated below the plate (62), the said pipes being pierced, in the upper end and extending to a lowest level which is above the level of the plate, by lateral orifices (63) permitting the introduction of the dense fluid and of some of the light fluid inside the said pipes (60),
- ~~the said device being characterized by~~ a tubular system (50) extending downwardly from above the vertical pipes into the reaction chamber for the introduction of the dense fluid from outside the ~~reactor~~ reaction chamber into a volume surmounting the horizontal plate (62), which volume is above ~~between~~ the plate and below the lowest level of ~~at least one~~ said lateral orifices ~~orifice~~ (63) ~~of the pipes in contact with the dense fluid~~, the tubular system having exit slots for the dense fluid that are wholly immersed in the said volume surmounting the plate (62), and
- means for introducing said light fluid into the reaction chamber above the level of the plate (62).

2. (Original) Mixing and distribution device according to claim 1 in which the tubular system is situated at a level next to the level of the plate.

3. (Currently Amended) Device according to claim 1 in which the density of the number of vertical pipes is between 100 and 700 per m^2 of reactor cross-section~~, and preferably between 150 and 500 per m^2 of reactor section~~.

4. (Currently Amended) Device according to claim 1 in which the lateral orifices (63) are distributed along the pipes (60) on ~~several~~ two or more levels, the lowest level being situated at a distance of between 100 and 300 mm ~~relative to~~ above the level ~~where~~ of the exit slots of the tubular system (50) ~~discharges~~.

5. (Currently Amended) Device according to claim 1 in which the pipes (60) are extended by a distance h below the level of the plate (62), this distance h ~~preferably~~ being between 10 and 100 mm.

6. (Currently Amended) Device according to claim 1 in which the distance (d) separating the lower end of the pipes (60) from the upper level of the granular bed ~~situated immediately below~~ downstream therefrom is between 0 and 50 mm, excluding 0~~, and preferably between 0 and 20 mm, excluding 0~~.

7. (Currently Amended) Device according to claim 1 in which the tubular system (50) comprises a more or less vertical principal tube extending downward into the volume surmounting the plate (62) and a multiplicity of more or less horizontal secondary tubes (51) in communication with the principal tube fitted with exit orifices (54) within the volume surmounting the plate (62).

8. (Currently Amended) Device according to claim 1 in which the tubular system (50) comprises a more or less vertical tube extending downward into the volume surmounting the plate (62) fitted at its lower end with lateral slots (53) situated at a distance, relative to the lowest level of the lateral orifices (63) of the pipes (60), of between 100 mm and 500 mm.

9. (Currently Amended) Device according to claim 7 in which the exit orifices (54) of the secondary tubes (51) are directed downwards forming an angle relative to the vertical which is between -90 and +90° ~~and preferably between -45° and +45°~~.

10. (Original) Device according to claim 7 in which the exit orifices (54) of the secondary tubes (51) have the form of a nozzle with a more or less constant section.

11. (Original) Device according to claim 7 in which the exit orifices (54) of the secondary tubes (51) have the form of a nozzle with a variable section so as to present, in the direction of flow of the liquid, a convergent part followed by a divergent part.

12. (Currently Amended) Device according to claim 1 in which the lateral orifices (63) of the pipes (60) are distributed over at least two vertical levels, the said levels being vertically spaced at least 20 mm apart from each other.

13. (Currently Amended) Device according to claim 1 in which the maximum width of the ~~passage sections~~ lateral orifices (63), or their diameter when they are circular, is less than 75% of the diameter of the pipes (60) and greater than 2 mm.

14. (Original) Device according to claim 1 in which there is added at the top of the reactor a system (200) for separating the gas and liquid phases when the fluids to be distributed are introduced in a mixture, the said separation system comprising a cylindrical tube (210) with internal fittings permitting a rotation and a separation of the said mixture.

15. (Currently Amended) Device according to claim 14 in which the separation system (200) has from 1 to 4 tangential exits for the liquid phase (215) and for the gas phase (230), the ratio of the total area of the exit sections of the gas (230), that is to say the sum of the areas of the sections (230) divided by the area of the section of the tube (210) being between 0.5 and 4 times the passage section of the cylindrical tube (210)~~, and preferably more or less equal to 2~~.

16. (Currently Amended) Device according to claim 14 in which the tangential exits (215) for the liquid and (230) for the gas of the separation system (200) are spaced at a distance (p) greater than 50 mm ~~and preferably between 100 mm and 300 mm~~.

17. (Currently Amended) Device according to claim 14 in which the cylindrical tube (210) of the separation system (200) contains a screw the pitch number of which is between 1 and 6~~, and preferably between 2 and 3~~.

18. (Currently Amended) ~~Use of the device according to claim 1 in a~~ A hydrotreatment process for hydrocarbons which includes a step for mixing and distributing a dense, generally liquid, fluid and a light, generally gaseous, fluid, placed in a reaction chamber upstream from a granular bed or between two successive granular beds, using a device according to claim 1.

19. (Currently Amended) ~~Use of the device according to claim 18 in~~ A method for mixing and distributing a dense, generally liquid, fluid and a light, generally gaseous, fluid in a descending gas and liquid co-current ~~reactors~~ reactor, upstream from a granular bed or between two successive granular beds, using a device according to claim 1, and in which the volume ratio of gas to liquid is between 0 and 400, excluding 0.

20. (Currently Amended) ~~Use of the device~~ The method according to claim 19 ~~in descending gas and liquid co-current reactors,~~ wherein the liquid flux ~~being~~ is between 0.5 and 100 kg/m^2/second ~~and preferably between 10 and 80 kg/m^2/second~~.

21. (New) Device according to claim 1 in which the density of the number of vertical pipes is between 150 and 500 per m^2 of reactor cross-section.

22. (New) Device according to claim 1 in which the distance (d) separating the lower end of the pipes (60) from the upper level of the granular bed downstream therefrom is between 0 and 20 mm, excluding 0.

23. (New) Device according to claim 7 in which the exit orifices (54) of the secondary tubes (51) are directed downwards forming an angle relative to the vertical which is between -45° and +45°.

24. (New) Device according to claim 15, wherein the sum of the areas of the sections (230) divided by the area of the section of the tube (210) is approximately 2 times the passage section of the cylindrical tube (210).

25. (New) Device according to claim 14 in which the tangential exits (215) for the liquid and (230) for the gas of the separation system (200) are spaced at a distance (p) between 100 mm and 300 mm.

26. (New) The method according to claim 19 wherein the liquid flux is between 10 and 80 kg/m^2/second.

27. (New) The method according to claim 7, wherein the exit orifices (54) within the volume surmounting the plate (62) on the horizontal secondary tubes (51) are uniformly distributed over the horizontal cross-section of the reaction chamber.